



PATENT APPLICATION AET
Attorney Docket No.: OKA-0019

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Tadayoshi IJIMA

Application No.: 09/748,188

Filed: December 27, 2000

Group Art Unit: 1773

Examiner: Nikolas J. Uhler

**For: TRANSPARENT CONDUCTIVE FILM AND METHOD FOR PRODUCING
THE SAME**

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JUL 17 2003
GROUP 1700
#19/Recon
7/30/03

REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REMARKS

This is in full and timely response to the Office Action mailed March 14, 2003 (Paper No. 17), submitted concurrently with a Petition for Extension of Time to within the first extended month. Claims 2-8 are pending in this application, with claims 2-3 and 8 pending for the Examiner's reconsideration, with claims 4 and 8 being independent. Reexamination and reconsideration in light of the above amendments and the following remarks is respectfully requested.

Applicant notes that the Office Action continues to indicate that claims 2, 3 and 8 are pending in the application. However, claims 2-8 are pending in this application, as claims 4-7 have never been canceled. Correction is requested.

Rejections under 35 U.S.C. §112

Claims 2, 3 and 8 are rejected under 35 U.S.C. §112, second paragraph for indefiniteness. The Office Action alleges that claim 8 is indefinite, alleging that “it is unclear to the examiner whether the parts by volume requirement in the claim is intended to only apply to the resin binder, or whether it is intended to also limit the volume of the transparent impregnated substance when a resin such as acrylic is impregnated into the film.”

Claim 8 clearly recites that the compressed layer has conductive fine particles and a resin, and that the resin is approximately 0.03-9.3 parts by volume with respect to 100 parts by volume of the conductive fine particles. Later the claim recites that the compressed layer further comprises an impregnated transparent substance. Accordingly, the claim is clear on its face.

Withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. §103

Claims 2-3 and 8 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,411,792 to Yukinobu et al. Applicant respectfully traverses this rejection.

Applicant notes that the examiner continues to parse the claims, stating that the limitation “formed by compressing the conductive fine particles and the resin on the support” is a process limitation, and does not further limit the structure of the product. Applicant disagrees. Still further, the examiner alleges that all of the limitations of claim 2 are product by process limitations and do not further limit the independent claim. Applicant disagrees.

Claim 8 recites a transparent conductive film comprising: a compressed layer on a support, said compressed layer having conductive fine particles and a resin, said resin being approximately 0.03-9.3 parts by volume with respect to 100 parts by volume of said conductive fine particles, said compressed layer formed by compressing the conductive fine particles and the resin on the support, wherein said compressed layer further comprises an impregnated transparent substance.

Regarding Yukinobu et al. '792, the examiner alleges that all the claim elements are taught. See the Office Action at paragraph 10. The examiner acknowledges, however, that the reference does not teach 0.03-9.3 parts by volume of the resin binder with respect to 100 parts by volume of the conductive particles. The examiner opines in paragraph 12 of the Office Action

that the reference teaches that if the amount of resin binder present in the film is “too much,” the film will not exhibit good resistivity, “whereas if too little resin is utilized, the film is excessively porous and becomes hazy.” The examiner concludes that “it would have been obvious ... to control the amount of binder resin in the film of Yukinobu in order to obtain a transparent conductive film that exhibited the desired resistance and haze properties.” However, the examiner refers only to the background portion of Yukinobu et al. ‘792. Yukinobu et al. ‘792 do not disclose, teach or suggest the ranges claimed, and as this is a discussion of the shortcomings of the prior art, this can be considered no more than an invitation to experiment. The examiner then states that it “is the examiner’s position that after the heat treatment step” of Yukinobu et al. ‘792 in examples 15-18, “a small residual amount of resin binder will remain.” This is a conclusion reached by the examiner without support from the applied reference, and as such is clearly a situation of the examiner taking official notice.

Yukinobu et al. ‘792 discloses that “This film was thermally treated in a nitrogen atmosphere at 400°C for 10 minutes for forming a coating layer by *carbonizing* the acrylic resin,” (column 13, lines 29-31) and “a transparent conductive film was formed by heating the transparent conductive layer *in air at 400°* for 30 minutes and then in a nitrogen atmosphere at 400° for 25 minutes.” See column 13, lines 37-40. The examiner’s statements above do not correlate with this description.

Accordingly, the acrylic resin was *carbonized* by heating to 400° in a nitrogen atmosphere, resulting in soot remaining, i.e. carbon which can no longer function as a binder resin. Furthermore, the soot is gasified as carbon dioxide by *heating to 400° in air*, resulting in transparency. Even if some residue is still on the film after the above heating process, the residue no longer functions as a binder resin.

Several basic factual inquiries must be made in order to determine obviousness or non-obviousness of the claims of a patent application under 35 U.S.C. § 103. These factual inquiries are set forth Graham v. John Deere Co., 383 U.S. 1,17,148 USPQ 459,467 (1966):

Under § 103, the scope and content of the prior art to be determined; the differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or non-obviousness of the subject matter is determined.

The specific factual inquiries set forth in Graham have not been considered or properly applied by the Examiner in formulating the rejections of the subject claims. Particularly, the scope and content of the prior art and the level of ordinary skill in the pertinent art were not properly determine and demonstrated and applied to the claimed invention.

In this application, proper consideration of factual inquiries demonstrates non-obviousness of the claimed invention. Yukinobu et al. '792 does not disclose, teach or suggest that the resin is approximately 0.03-9.3 parts by volume with respect to 100 parts by volume of the conductive fine particles.

It is clear that one of ordinary skill in the art would not have looked at a teaching of Yukinobu et al. '792 for the resin/conductive fine particles quantitative relationship, other than as an invitation to experiment.

As acknowledged in the Office Action, Yukinobu et al. '792 do not teach 0.03-9.3 parts by volume of the resin binder with respect to 100 parts by volume of the conductive particles. The examiner opines in paragraph 12 of the Office Action that the reference teaches that if the amount of resin binder present in the film is "too much," the film will not exhibit good resistivity, "whereas if too little resin is utilized, the film is excessively porous and becomes hazy." The examiner concludes that "it would have been obvious ... to control the amount of binder resin in the film of Yukinobu in order to obtain a transparent conductive film that exhibited the desired resistance and haze properties." However, the examiner refers only to the background portion of Yukinobu et al. '792. Yukinobu et al. '792 do not disclose, teach or suggest the ranges claimed, and as this is a discussion of the shortcomings of the prior art, this can be considered no more than an invitation to experiment. The examiner then states that it "is the examiner's position that after the heat treatment step" of Yukinobu et al. '792 in examples 15-18, "a small residual amount of resin binder will remain." This is a conclusion reached by the examiner without support from the applied reference, and as such is clearly a situation of the examiner taking official notice.

As discussed above, Yukinobu et al. '792 discloses that "This film was thermally treated in a nitrogen atmosphere at 400°C for 10 minutes for forming a coating layer by *carbonizing* the acrylic resin," (column 13, lines 29-31) and "a transparent conductive film was formed by heating the transparent conductive layer *in air at 400°* for 30 minutes and then in a nitrogen

atmosphere at 400° for 25 minutes.” See column 13, lines 37-40. The examiner’s statements above do not correlate with this description.

Accordingly, the acrylic resin was *carbonized* by heating to 400° in a nitrogen atmosphere, resulting in soot remaining, i.e. carbon which can no longer function as a binder resin. Furthermore, the soot is gasified as carbon dioxide by *heating to 400° in air*, resulting in transparency. Even if some residue is still on the film after the above heating process, the residue no longer functions as a binder resin.

Furthermore, the Office Action does not suggest any motivation to determine the amount of resin actually present in any step of Yukinobu et al. ‘792.

Accordingly, a prima facie case of obvious has not been established. For at least the reasons above, claim 8 is therefore patentable, and withdrawal of the §103(a) rejection is therefore respectfully solicited.

Claims 2-3, being dependent upon claim 8, are also allowable for the reasons above. Moreover, these claims are further distinguished by the materials recited therein, particularly within the claimed combination. Withdrawal of the §103(a) rejection is therefore respectfully solicited.

Still further, the Office Action acknowledges that Yukinobu et al. ‘792 do not explicitly teach the quantity of resin, and as a result, in order for the examiner to conclude these values, the examiner must take Official Notice. Applicant respectfully traverses these rejections for the reasons stated above, as well as the reasons stated below.

Applicant, by this Request for Reconsideration, hereby requests that the Examiner either:

1. provides an affidavit attesting to all the elements taken as Official Notice; or
2. provides another non-final Office Action withdrawing Official Notice and, if the Examiner wishes to maintain this rejection, provide suitable references for the asserted rejection.

Since the Examiner’s Official Notice is hereby challenged, under M.P.E.P. § 2144.03, 37 C.F.R. 1.104, this is a full and complete response to the pending rejection. Withdrawal of this rejection is respectfully requested.

Still further, as acknowledged in the Office Action, a heat treatment step is used in Yukinobu et al. '792. As discussed in the previous Amendment regarding the method of Kawata et al. '962, this is a baking process. This baking process is operated at about 400°C or higher (column 5, lines 21, column 6, lines 62-64, and elsewhere) in air and then in an inert gas atmosphere.

In contrast, the present invention comprises a compressing process for obtaining conductive property. In the compressing process, the compression increases the number of contact points among the conductive fine particles to increase the contact area and the electric resistance is reduced. See page 22, line 25 to page 23, line 3. Accordingly, the electric resistance is reduced without calcining at a high temperature. See page 9, lines 7-8. The present specification clearly recites the unfavorable influence of the calcining process at page 4, lines 17-21, whereby "since a calcining step at a temperature higher than 300°C must be carried out, it is difficult to form a conductive film on a support such as a resin film. In other words, the resin film will be melted, carbonized, or burnt by the high temperature."

Not calcining at a high temperature permits the support to be "various ones such as resin film, glass, ceramics and others." See page 19, lines 7-8. Furthermore, the use of resin film results in weight reduction (page 19, line 17) and good close adhesion of the conductive fine particle layer to the film. See page 19, lines 15-16. The peel test result in the Example to evaluate the close adhesion of the conductive layer to the support film and the strength of the conductive layer reflects this remarkable effect. Additionally, the use of the resin film brings excellent flexibility of the transparent conductive film.

Accordingly, for all the reasons discussed above, it would not be obvious to make the transparent conductive film of claim 8 from Yukinobu et al. '792. Withdrawal of this rejection is respectfully requested.

Dependent claims 2-3 depend from claim 8, are also allowable for the reasons above. Moreover, these claims are further distinguished by the materials recited therein, particularly within the claimed combination. Withdrawal of the §103(a) rejection is therefore respectfully solicited.

**Conclusion**

For the foregoing reasons, claims 2-3 and 8 are allowable, and the present application is in condition for allowance. Accordingly, favorable reexamination and reconsideration of the application in light of these amendments and remarks is courteously solicited. If the examiner has any comments or suggestions that would place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number below

Respectfully submitted,

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Date: July 14, 2003

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